

The present invention relates to a novel protein of the MEKK signal transduction pathway, and the gene encoding it. The invention further relates to diagnostic and therapeutic uses of the protein or the gene, and to methods of screening for agonists or antagonists of the protein, particularly with respect to MEKK activity. In particular, the invention provides a gene encoding MIF1, the MIF1 protein, and antibodies that specifically bind MIF1. MIF1 and the *MIF1* gene can be used in screening assays, particularly to identify agonists and antagonists of MIF1 interaction with MEKK, and thus modulators of the MEKK signal pathway. *MIF1* gene (or cDNA) can also be delivered to cells, *e.g.*, for *in vitro* screening or testing, or *in vivo* or *ex vivo* for gene therapy.